

<b>Rules &amp; Regulations</b> <b>of the State of Georgia</b>		40-7-8-.04 Certification Mark Agreement
<b>GEORGIA DEPARTMENT OF AGRICULTURE</b>		40-7-8-.05 Labeling
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**40-7-8-.01 Scope of Regulations.**

The following regulations shall apply to all persons involved in the production, packaging, processing, holding, storing, distribution and sales of Vidalia onions.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.02 Definitions. Amended.**

(1) The following words or terms shall have the meaning set forth herein when used in these rules and regulations:

(a) "*Handle*" or "*Ship*" means to package, load, sell, transport, or in any other way to place Vidalia onions, or cause Vidalia onions to be placed, in the current of commerce within the production area or between the production area and any point outside thereof. Such term shall not include the

transportation, sale, or delivery of field-run Vidalia onions to a person within the production area for the purpose of having such Vidalia onions prepared for market. Nothing contained in this definition shall authorize the repacking of Vidalia onions except as specifically authorized under Paragraph 40-7-8-.08 (1) (f) 2. of these rules.

(b) "*Handler*" is synonymous with "*Shipper*" and means any person within the Vidalia onion production area (*except a common contract carrier of Vidalia onions owned by another person*) who handles Vidalia onions, or causes Vidalia onions to be handled.

(c) "*Person*" means any association, individual, partnership, corporation or any other legal entity.

(d) "*Producer*" is synonymous with "*grower*" and means any person engaged in a proprietary capacity in the production of Vidalia onions for market.

(e) "*Producer-Handler*" means a producer who handles Vidalia onions.

(f) "*Vidalia Onion Advisory Panel*" means the advisory panel established pursuant to Code Section 2-14-138.

(g) "*Vidalia Onion Variety*" means varieties of **Allium Cepa** of the hybrid granex, granex parentage or other similar varieties. The Commissioner may limit the usage of certain varieties or authorize the inclusion of new varieties based upon recommendation of the Director of the Experiment Stations of the College of Agricultural and Environmental Sciences of the University of Georgia.

(h) "*Vidalia Onion*" means any onion of the type defined in paragraph (g) of this section and produced in the "*Vidalia Onion Production Area*" as defined in paragraph (i) of this section.

(i) "*Vidalia Onion Production Area*" means a specific production area which encompasses only that part of the state particularly described as follows:

Beginning at a point in Laurens County where U. S. Highway 441 intersects Highway 16; thence continue southerly along U. S. Highway 441 to a point where it intersects the southern boundary of Laurens County; thence southwesterly along the border of Laurens County to a point where it intersects the county road known as Jay Bird Springs Road; thence southeasterly along Jay Bird Springs Road to a point where U. S. Highway 23 intersects the western border of Telfair County; thence southwesterly following the western and southern county border of Telfair County to a point where it intersects with Jeff Davis County; thence following the southern border of Jeff Davis County to a point where it intersects the western border of Bacon County; thence southerly and easterly along the border of Bacon county to a point where it intersects Georgia State Road 32; thence easterly along Georgia State Road 32 to Seaboard Coastline Railroad; thence northeasterly along the tracks of Seaboard Coastline Railroad to a point where they intersect Long County and Liberty County; thence northwesterly and northerly along the southwestern border of Liberty county to a point where the border of Liberty County intersects the southern border of Evans County; thence northeasterly along the eastern border of Evans County to the intersection of the Bulloch County border; thence northeasterly along the Bulloch County border to a point where it intersects with the Ogeechee River; thence northerly along the main channel of the Ogeechee River to a point where it intersects with the southeastern border of Screven County; thence northeasterly along the southeasterly border of Screven County to the main channel of the Savannah River; thence northerly along the main channel of the Savannah River to a point where the northwestern boundary of Hampton County, South Carolina intersects the Savannah River; thence due west to a point where State Road 24 intersects Brannen Bridge Road; thence westerly along Brannen Bridge Road to a point where it intersects with State Road 21; thence westerly along State Road 21 to the intersection of State Road 17; thence westerly along State Road 17 to the intersection of State Road 56 and

southerly to the northern border of Emanuel County; thence westerly and southerly along the boundary of Emanuel County to a point where it intersects the Treutlen County border; thence southerly to a point where the Treutlen County border intersects Interstate Highway 16; thence westerly to the point of beginning in Laurens County.

(j) "*Registration*" means a process whereby persons desiring to produce and/or pack onions for marketing as Vidalia onions are registered by the Department as Vidalia Onion Producers and/or Packers. Nothing contained in this definition shall authorize the repacking of Vidalia onions except as specifically authorized under Paragraph 40-7-8-.08 (1) (f) 2. of these rules.

(k) "*Department*" means the Department of Agriculture of the State of Georgia.

(l) "*Commissioner*" means the Commissioner of Agriculture of the State of Georgia.

(m) "*Label*" means a display of written, printed or graphic matter upon the immediate container of Vidalia onions.

(n) "*Labeling*" means all labels and other written, printed or graphic matter, including advertising, upon an article or any of its containers or wrappers, or accompanying such article.

(o) "*Georgia Federal-State Shipping Point Inspection Service*" or "*Inspection Service*" is the Corporation authorized by the Department to conduct inspection, certification, and identification of the class, quantity, quality and condition of agricultural products in Georgia.

(p) "*Pack*" means the initial placement of Vidalia onions into properly labeled containers by grower/packers or packers within the Vidalia onion production area only who have been properly certified and registered by the Department.

(q) "*Repack/Repacking*" means the removing of Vidalia onions by any individual from initially-packed containers, as described in (p) above of this subparagraph, and subsequently placing those same onions into any other like or unlike containers bearing the registered U.S. Certification Mark "VIDALIA®".

(r) "*Shipping date*" means the first day on which Vidalia onions may be shipped for sale.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.03 Registration. Amended.**

(1) Each person who desires to produce and/or package onions as Vidalia onions must register with the Commissioner on or before April 15, 1986, and before March 1 of each year thereafter. Registration forms are to be filled out completely and accurately. If acreage planted should change, or any other information such as name, address, label information or packer from that indicated on the report filed by March 1, then a supplemental report shall be submitted no later than April 15.

(2) Registration forms may be obtained from the Georgia Department of Agriculture, Marketing Division, Capitol Square, Atlanta, Georgia 30334.

(3) The Commissioner may deny or revoke registration of any person for failure to register by deadline, violating any of these regulations, or for any intentional misrepresentation of a material fact in the registration application.

(4) Registration is not transferable.

(5) No person shall pack Vidalia onions unless the grower of such onions is properly registered.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.03.1 Vidalia Onion Varieties Allowed To Be Grown.**

(a) Upon recommendation of the Director of the Experiment Stations of the College of Agricultural and Environmental Sciences of the University of Georgia, the Commissioner authorizes the following onion varieties to be included as a "*Vidalia onion variety*" as defined in Rule 40-7-8-.02 (g) and to be planted and marketed as Vidalia onions:

<i>19013</i>	<i>Cyclops (XP 6695)</i>
<i>Sapelo Sweet (DPS 1039)</i>	<i>Sweet Melody (RCS 1938)</i>
<i>Granex 33</i>	<i>Georgia Boy (DPS 1032)</i>
<i>Pegasus</i>	<i>Mr. Buck (DPS 1033)</i>
<i>Sweet Vidalia</i>	<i>Ohoopee Sweet (DPS 1024)</i>
<i>SRO 1001 (RCX 5195-1)</i>	<i>Nirvana (RCS 1027)</i>
<i>SRO 1000 (RCX 6043)</i>	<i>EX 075 92000</i>
<i>Savannah Sweets</i>	<i>Granex Yellow PRR</i>
<i>SSC 6372 F1</i>	<i>99C 50992</i>
<i>Sugar Belle F1 (SSC 6371 F1)</i>	<i>XON-203Y (01ZG 5034)</i>
	<i>Miss Megan (DPSX 1290)</i>

(b) Upon the same recommendation, the following onion varieties are specifically limited and excluded from being planted and marketed as Vidalia onions to wit: *Sweet Dixie, Sugar Queen, Spring Express, WI 3115, WI 609, PS 7092, Southern Belle, Southern Honey, Sweet Melissa (1519) and Sweet Advantage (DPS 1058)*.

(c) Upon the same recommendation, any variety not listed in paragraph "(a)" above is specifically limited and excluded from being planted and marketed as Vidalia onions until it shall have completed three years of testing by the College of Agricultural and Environmental Sciences of the University of Georgia to evaluate shape, color, pungency, sugars, and other factors characteristic of Vidalia onions and is recommended for inclusion as a Vidalia onion by the Director of the Experiment Stations of said College.

(d) In addition to the criteria established by the Director of the Experiment Stations of the College of Agricultural and Environmental Sciences of the University of Georgia for making his/her recommendation, the following guidelines will be considered by, but not limit, the Commissioner in reviewing the

recommendations of the Director for the authorization of additional varieties or limitation of existing varieties:

(1) Any proposed new variety must be registered by the seed producer with the Department prior to commencement of any official test trials by a seed producer, onion grower, or the Director; such registration shall include, without limitation, the proposed name and test identification number, results of seed producer tests, and other relevant data; in the case of varieties being tested at or before the effective date of this rule, such registration shall be within sixty (60) days of the effective date of this rule.

(2) The seed producer shall furnish the Director with a representative quantity, as determined by the Director, of the new variety and of any existing approved variety for testing by an annual deadline set by the Director.

(3) The test period shall be three (3) consecutive years in University test trials. Test plots on individual farms (*either by the seed producer, an onion grower or the Director*) shall be limited to 0.07 acres (*approximately 3,000 square feet*) for each variety, which shall be clearly identified and segregated from plantings of approved Vidalia varieties and reported in writing by January 15<sup>th</sup> of the harvest year to the Department with appropriate lay-out maps showing the location thereof. At the completion of each test trial from an individual farm, the test plots must be completely destroyed and under no circumstances may any onions from said plots be introduced into the marketplace or sold as Vidalia onions.

(4) Prior to planting test plots, seed producers shall furnish, in writing, to the Department the names and locations of all growers where test trials are to be conducted.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.03.2 Onion Seed Sold to Growers in Vidalia Onion Production Area.**

All persons and entities selling onion seed to anyone in the Vidalia Onion Production Area shall provide a complete list

of those customers to the Department no later than January 1 of each year. Required information shall include, but not be limited to, name and complete address of customer, date seed sold, variety sold and amount sold. Any such information deemed confidential shall be subject to the requirements of Paragraph 40-7-8-.18 of these rules.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.04 Certification Mark Agreement.**

Any person who desires to grow, pack, process, market and/or sell onions as Vidalia onions or use the Mark "*Vidalia®*" on products containing Vidalia onions, must enter into an agreement with the Georgia Department of Agriculture for the use of the registered U. S. Certification Mark "*Vidalia®*". The Commissioner shall establish the terms and conditions of the agreement annually. The royalty or license fee for processed onions or products containing Vidalia onions shall be 0.5¢ for six ounces, or portion thereof, or product, except that in the case of frozen products the fee shall be 0.1¢ for six ounces, or portion thereof. The agreement must be renewed annually. The term of the agreement shall be from the date of execution through the last day of February of the next preceding year in all cases except those for processed onions or products containing Vidalia onions, and through the last day of the next June in the case of processed onions or products containing Vidalia onions.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.05 Labeling. Amended.**

(1) The term "*Vidalia*" may not be used in the advertising or labeling of onions sold or delivered, held, stored, or offered for sale, unless such onions are of the variety defined in paragraph (g) of Section 40-7-8-.02 of these rules, and were grown in the Vidalia onion production area, and meet the other requirements of these rules.

(2) All packaged Vidalia onions must be labeled to show:

(a) Common or usual name of the food (*onion*);



(b) An accurate statement of the quantity of the contents in terms of weight (*example: 3-pound, 5-pound, 10-pound, 25-pound, 50-pound*);

(c) The statement "*Product of Georgia*" or "*Georgia Grown*", or the Department's promotional logo "*Georgia. Always in good Taste*" may be displayed;

(d) The name and complete address of the place of business of the producer and/or packer.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.06 Standards for Grades of Vidalia Onions. Amended.**

The standards and grades as adopted by the U. S. Department of Agriculture, U. S. Standards for Grades of Bermuda-Granex-Grano type onions, effective January 1, 1960, amended October 10, 1995 (*7 CFR 51.395-51.3209*), and future supplements and amendments thereto, are adopted as the Standards and Grades for Vidalia onions, except as otherwise provided in these rules.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.07 Onion Pungency Analysis**

The following standard procedures will be required to analyze and evaluate pungency levels in Vidalia Onions. These procedures must be used when there is the desire to publish such findings and utilize the same in promoting and/or marketing Vidalia ® onions based on their pungency analysis results.

This regulation is in two sections:

- Section 1 establishes the test methodology required for the determination of pungency levels of Vidalia onions.
- Section 2 establishes the sample collection method that must be utilized if pungency values are to be used in the promotion and/or marketing of Vidalia onions.

## Section 1.0: Standard Method for Onion Pungency Analysis

The following standard analysis method will be required when conducting pungency analyses on Vidalia Onions.

### Section 1:1 Preparation of the Required Chemical Reagents:

#### Reagent 1: Trichloroacetic acid (TCA)

Trichloroacetic acid (TCA)

Source: Fisher Scientific (A322-500)

#### 5% Solution

Dissolve 50 grams of TCA in 1000 mL of distilled water using a volumetric flask.

Using a powder funnel, add 50 grams of TCA to volumetric flask, add ~ 200 mL of water and stir until dissolved. Bring to volume (1000 mL) with distilled water. The solution can be stored in a closed amber bottle at room temperature for no more than six months.

Comment: TCA is used to stop the enzymatic activity of alliinase by precipitating and deactivating the enzyme.

#### Reagent 2: 2,4 dinitrophenylhydrazine (2,4 DNPH)

2,4 dinitrophenylhydrazine (2,4 DNPH)

Source: Sigma Chemical Company (D 2630)

Hydrochloric acid (HCl) 36-38%

Source: J.T. Baker (9535-33)

First:

2N HCl

Dilute 166 mL of ~38% HCl in 1000 mL of distilled water using a volumetric flask.

Using a standard funnel, gradually add HCL to ~500 mL of water and stir until dissolved. The solution will heat slightly as HCL is added which can change volume. Bring to volume (1000 mL) with remaining distilled water, making sure the funnel is washed of any remaining HCL.

Second:

Prepare 0.0125% 2,4 DNPH

Transfer ~ 500 mL of the 2N HCL to a clean beaker. Weigh out exactly 0.125 grams of 2,4 DNPH on a scale that reads to four decimal places (e.g., 0.0001grams). Use a Fisher brand 1 5/8 inch weigh boat. On a hot plate/stir plate combination, add 0.125 grams of 2,4 DNPH to the HCL remaining in the volumetric flask. Use 2N HCL to wash any 2,4 DNPH sticking to the weigh boat into the flask. Set the temperature on the hot plate to a low setting and place a magnetic stir bar in the bottom of the flask to help dissolve the 2,4 DNPH. When the 2,4 DNPH is fully dissolved, add the remaining 500 mL of 2N HCL to make 1000 mL. Let the solution cool to room temperature before using.

Precautions:

- 2,4 DNPH is very toxic and should be handled with extreme care.
- The 2,4 DNPH solution must be used out of and stored in an amber bottle.
- The solution if stored in the refrigerator is good for six months.
- If the solution is refrigerated, it must be brought to room temperature before being used in the pyruvic acid method. A cold solution could affect the reaction in the water bath because the reaction is temperature and time sensitive.
- If a precipitant is observed in the solution, it has gone bad and should be disposed of properly. Check for a precipitant every time the 2,4 DNPH solution is used by holding the bottle up to a light source.

Reagent 3: Sodium Hydroxide (NaOH)

Sodium Hydroxide (NaOH)

Source: J.T. Baker (3722-05)

0.6 N NaOH

Dissolve 24 grams of NaOH in 1000 mL of distilled water.

Using a powder funnel, add the NaOH pellets to a 1000 mL volumetric flask. Add approximately 500 mL of distilled water and dissolve the pellets. Then add the remaining water to make 1000 mL. Immediately put the solution in an amber bottle before dispensing.

Precautions:

- NaOH solutions degrade in a very short period of time and must be made daily or only on the days that this procedure is performed.
- NaOH that has gone bad will cause the solution from the final reaction to appear dark yellow when it should be a rust color.
- NaOH pellets will absorb water readily from air and will change weight quickly. When weighing out the NaOH, make sure it is done as quickly and accurately as possible so the pellets do not absorb water. Immediately close the NaOH container once the pellets have been removed for the same reason.
- Only make up enough NaOH to be used for the current days analyses. Estimate the volume of 0.6 N NaOH to be used, including that for the standard curve and adjust the NaOH pellet weight and distilled water to accommodate.

Reagent 4: Sodium Pyruvate (Used in making the standard series.)

Sodium Pyruvate (Used in making the standard series.)

Source: Sigma Chemical Company (P 2256)

Section 1.2 Preparation of a standard series for pyruvic acid measurement.

**Prepare 0.1 M sodium pyruvate stock solution**

Dissolve 1.1 grams of sodium pyruvate in 100 mL of distilled water.

Add to a 100 mL volumetric flask 1.1 grams of sodium pyruvate. Wash the weigh boat containing the sodium pyruvate with distilled water and pour into the flask. Then bring the flask to volume (100mL) with distilled water.

Pyruvate Standard Series: Seven concentrations suitable for Vidalia Onions

Concentration 1: 0.25  $\mu$  moles pyruvate/mL  
2.5 mL of 0.1 sodium pyruvate stock solution brought to 1000 mL with distilled water in a volumetric flask.

Concentration 2: 0.2  $\mu$  moles pyruvate/mL  
2 mL of 0.1 sodium pyruvate stock solution brought to 1000 mL with distilled water in a volumetric flask.

Concentration 3: 0.15  $\mu$  moles pyruvate/mL  
1.5mL of 0.1 sodium pyruvate stock brought to 1000 mL distilled water in a volumetric flask.

Concentration 4: 0.1  $\mu$  moles pyruvate/mL  
50 mL of 0.2  $\mu$  moles pyruvate stock solution brought to 100 ml distilled water in a volumetric flask.

Concentration 5: 0.05  $\mu$  moles pyruvate/mL  
25 mL of 0.2  $\mu$  moles pyruvate stock solution brought to 100 ml distilled water in a volumetric flask.

Concentration 6: 0.025  $\mu$  moles pyruvate/mL  
12.5 mL of 0.2  $\mu$  moles pyruvate stock solution brought to 100 ml distilled water in a volumetric flask.

Concentration 7: 0.010  $\mu$  moles pyruvate/mL  
5 mL of 0.2  $\mu$  moles pyruvate stock solution brought  
to 100 mL distilled water in  
a volumetric flask.

Precautions and Comments:

- Extreme precision should be exercised when measuring the sodium pyruvate salt and dispensing volumes when constructing the standard series. The prediction of unknown pyruvate concentrations from onion juice is only as accurate as the standard series established.
- The sodium pyruvate series will degrade over time and significant loss can occur in a 24 hour period. While the sodium pyruvate stock does not degrade as quickly, it should be made fresh each time a new series is established.
- Once made, each of the standards can be dispensed into 1.5 mL plastic vials and frozen (-20 to -80 °C) until needed. *This is the preferred method.* The above dilutions are sufficient for making 60 units of the standard series if **each standard is** dispensed in 1.5 mL aliquots. Once frozen, the standards are good for up to a year if they are not thawed. This approach adds consistency to the pungency evaluation by establishing a uniform standard series across evaluation dates. Prior to use, the standards need to be brought to room temperature.
- A new standard series should be used for pyruvate quantification each time a new reagent stock solution is made and used during pungency analysis.
- When constructed as prescribed above, the standard series results in a straight line (a linear relationship) when the results are graphed. However, on some spectrophotometers with lower powered light sources, the higher standard concentrations may begin to fall below the predicted line. If this occurs, the series will over estimate low pungency unknowns and underestimate higher pungency unknowns. Therefore, the power of the spectrophotometer should be considered when establishing the high standard in the series, making sure the line predicted is linear.

- The absorbance from the highest standard in the series should always exceed the absorbance (Spectrophotometric measurement) of the highest unknown (onion sample). Otherwise those points beyond the highest standard are being extrapolated and are unreliable.
- If the unknown samples are consistently reading above the highest standard, the onion juice containing the unknown pyruvate content should be further diluted to bring their concentration within the linear range of the **standard series**. **Further** dilution should occur at the water addition step in the preparation of the juice. Subsequently, the multiplication factor needs to be adjusted accordingly.

#### Section 1:3 Obtaining Onion Tissue Samples:

Each "sample" must consist of the tissues obtained from 10 individual bulbs. This is required in order to account for bulb-to-bulb flavor variability.

Tissue samples from each bulb must be obtained in one of two established ways.

Method A: Obtain a wedge from each bulb. First, cut the bulb in half, top to bottom (Figure 1). Second, cut a wedge from one of the halves which represents the entire bulb (Figure 2).

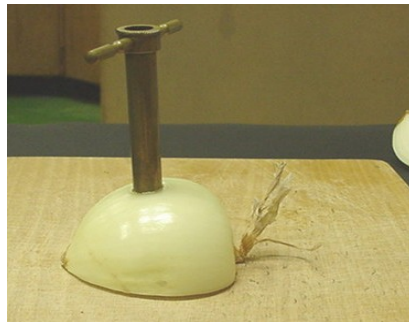
Figure 1  
Figure 2



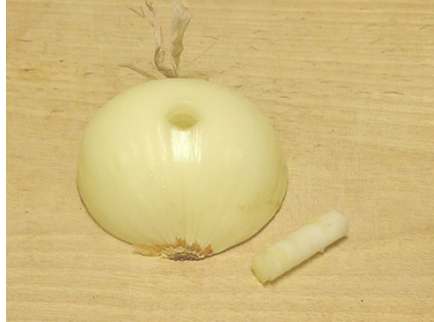
Method B: Obtain tissue cores from each bulb. Tissue cores must be taken just below the equator of the bulb. Whole bulbs or bulbs that have been halved can be used. A cork bore is positioned just below the equator of the bulb and is inserted through the tissue (Figure 3). The tissue core is then pushed out of the bore and collected for analysis (Figure 4).

Figure 3

Figure 4







Regardless of the method used above, the combined tissues of ten bulbs are collected in a disposable weigh dish for juicing. Adjust the size of the wedge or the diameter of the coring device so that the combined volume of the 10 tissue samples results in a complete maceration of the tissue sample during the pressing process. The tissue samples must be pressed within 15 minutes after collection.

#### Section 1.4 Obtaining Onion Juice from the Tissue Samples:

Onion juice is to be extracted from the combined tissues of 10 bulbs through the use of a pneumatic press with a press plate and barrel specially designed for onion tissue (Figure 5). Mechanical drawings which detail the press components and exact dimensions of the plate and barrel are available from the University of Georgia, Horticulture Department. The pneumatic press must be operated at air pressure of 90 pound per square inch. Two screens lie on top of the press plate. Screen 1, which is made from disposable window screening lies on top of Screen 2, which is made from stainless steel wire stock. The dimensions of both screens are outlined in the mechanical drawings. Following maceration, Screen 1 should be discarded, where as Screen 2 can be reused after first being rinsed with fresh water, and completely dried. After maceration the plunger must be wiped clean with a dry cloth or towel. Also after maceration the plate and barrel assembly must be rinsed in fresh water and dried prior to reusing. All components are to be at room temperature and free of onion debris and moisture.

Figure 5



Step 1. Macerate the onion tissue through operation of the press. The juice extracted is to be collected in a weigh dish.

Step 2. Within 5 minutes of juicing, 0.5 mL of juice is to be pipetted into a 25mm diameter by 150mm test tube (40 mL). The 0.5 mL of juice is allowed to incubate at room temperature for not less than eight minutes and not more than ten minutes after pressing.

Step 3. Following incubation, for the specified length of time, 1.5 mL of 5% TCA is dispensed into the juice and the solution is immediately mixed thoroughly on a vortex apparatus.

Step 4. Eighteen mL of distilled water is then added to the test tube and that solution is immediately thoroughly mixed on a vortex apparatus.

Step 5. The test tube is then capped with a #4 rubber stopper and can sit at room temperature for up to eight hours before continuing with the pyruvate analysis.

Precautions:

- It is necessary to pipette the 0.5 mL of juice within five minutes of juicing as occasionally the onion juice will

congeal to a gelatin like consistency. If congealing occurs after the juice is pipetted into the test tube, the results are not compromised.

- All pipettors used in the analysis should be calibrated daily. This is done by pipetting distilled water into a weigh boat that has been tared, or zeroed, on a balance. One mL of distilled water is equal to one gram. The pipette calibration should be repeated until the mL dispensed is equal to the weight equivalent (e.g., 1 mL = 1 gram). Anytime a pipette is accidentally dropped its calibration needs to be checked immediately for accuracy by using the above method.
- When repeating dispensers are used for dispensing the stock solutions, these dispensers should be calibrated weekly. The same method of water to weight calibration is used for dispensers.
- The diluted juice with TCA should not be held overnight for analysis.

#### Section 1.5: Pyruvic Acid Development and Quantification

The use of a spectrophotometer set at 420nm is required. The spectrophotometer must be turned on and allowed to warm for a minimum of 10 minutes. This time required for "warm-up" may vary depending on the specific machine and manufacturer used.

The use of a water bath which is able to maintain a temperature of 37° C is required. The water bath must be turned on and allowed to warm for a sufficient time for the water to reach 37 °C (+/- 0.5°C.) Water depth must be maintained at a level sufficient to submerge the solution volumes when the test tubes are placed in the water bath. A test tube rack is to be used to hold the test tubes upright.

Step 1. Pipette one mL of the diluted onion solution (with the TCA - from the 40 mL test tube) into a 16mm diameter by 125mm test tube (Fisherbrand 14-962-10G).

Step 2. Add one mL of 0.0125% 2,4 DNPH and then add 1 mL of distilled water. After adding the distilled water, vortex the

mixed solution.

Step 3. Place the test tubes containing the mixed solution in a test tube rack. Place the test tube rack into a re-circulating water bath set at 37 °C (+/- 0.5 °C) for exactly 10 minutes. This period must be timed with a count-down clock. After 10 minutes, remove the rack from the water bath.

Step 4. Within one minute, dispense five mL of 0.6 N NaOH into each test tube. Thoroughly mix these with a vortex device.

Step 5. From each tube pour a sample into a disposable cuvette that fit the spectrophotometer used, and the absorbance is read and recorded within 15 minutes of adding the NaOH. The solutions are then disposed of properly.

Precautions and Comments:

- Repeating dispensers are used for the 2,4 DNPH, distilled water, and 0.6 N NaOH.
- If the solutions are not thoroughly mixed, inconsistent results can be obtained.
- Time in the water bath and its temperature are extremely important. The reaction of the 2,4 DNPH and pyruvic acid is temperature and time dependent. For consistent results, these should be closely monitored.
- Once the NaOH is added, time is critical. Do not exceed 15 minutes before the absorbance is determined or the values will begin to decrease.
- Batches of 15 to 20 samples can be done efficiently and accurately. If the number of samples exceeds 20 in a batch, the absorbance may begin to decrease as the reactants begin to precipitate out of solution.

Section 1.6: Zeroing the Spectrophotometer & Establishing a Standard Series

Step 1: If the standards have been frozen, remove from the freezer and thaw to room temperature.

Step 2: One mL of each of the standard series stocks is added

to a 16mm by 125mm test tube. One mL of distilled water is also added to a test tube which will be used to zero the spectrophotometer.

Step 3: To each of the standards and the water zero, one mL of 2,4 DNPH and one mL of distilled water are added and the solutions are mixed.

Step 4: The solutions are to be placed in the 37 °C water bath for exactly 10 minutes and then removed.

Step 5: Five mL of NaOH is added to each standard and water zero, and mixed.

Step 6: First, the water zero is poured into a disposable cuvette, placed in the spectrophotometer, and the absorbance is adjusted to zero. The standard series is then dispensed into cuvettes and their absorbance is determined and recorded.

Step 7: Plot these values using a simple linear regression equation. These results will be used to determine the pyruvic acid content in the onion juice.

Precautions and Comments:

- The standards should be analyzed before the unknowns in the onion juice.
- Absorbance values should be close to the  $\mu$  moles pyruvate values in each of the standards if the water/2,4 DNPH solution is used to zero the spectrophotometer (e.g., the 0.10  $\mu$  moles pyruvate should have an absorbance close to 0.10).
- Each time a new reagent stock solution is used, a new standard series should be established and used to predict the unknown pyruvate samples.
- Because the NaOH is made daily, a new standard series needs to be established daily.
- The color of the final solution, after the NaOH is added, should be rust colored. The intensity of the color will depend on the amount of pyruvate in the solution. More pyruvate will cause a darker color to develop. If the

solutions are bright yellow, one of the stock solutions is bad. Most often, NaOH made up incorrectly or a solution that has gone bad will cause a bright yellow color to develop. On occasion, bad 2,4 DNPH will cause a bright yellow color to develop.

- The pH of the final solution should be close to 12 for the proper rust color to develop.

#### Section 1.7: Calculating the pyruvic acid content in the onion juice

$\mu$  Moles pyruvic acid of the onion juice is determined by multiplying the predicted value from the regression equation by 40. The dilution factor of the raw onion juice as written is 40x. A spread sheet, such as EXCEL, can be used for these calculations. The values determined through the simple linear regression should be reduced by 0.4  $\mu$  moles in order to allow for "normal" background pyruvate. Values are reported as  $\mu$  moles pyruvic acid per mL of onion juice.

#### Disclaimer:

The following disclaimer must be printed on all pungency analysis reports when the samples ARE NOT collected in accordance with Section 2 of these procedures:

"The pungency results reported were obtained using the pungency analysis method specified by the Georgia Department of Agriculture. The samples tested are not indicative of the flavor characteristics of any onions not tested and have no value in predicting the flavor characteristics of the field or shipment from which they were collected."

#### Section 2.0: Sample collection procedures

To better inform consumers of the flavor intensity they might be purchasing, field sampling and pungency testing must be used. This section of the regulation establishes the sample

collection method that must be utilized if pungency values are to be used in the promotion and/or marketing of Vidalia onions.

Section 2.1: Onion samples must be collected from the field prior to or during harvest.

Onion samples must be collected no earlier than 7 days prior to harvest and up to the time that the onions are removed from the field. Harvest is defined as undercutting of the onion roots. Removal from the field is defined as the onions being loaded onto or into a truck or a bulk transport vehicle. Onions can not be sampled after the onions have been removed from the field.

Onions must be tested for pungency within 5 days of the sample date. If onions are held during the 7 days allowed prior to pungency testing, they should be held at room or refrigerated temperatures. At no time should the sample onions be frozen or exposed to temperatures above 120 degrees Fahrenheit.

Section 2.2: Onion sample lots must be identified and not co-mingled with onions samples of another lot.

Individual lots must be identified and tested separately. A lot is defined as a single variety harvested within a single field within a 7 day period. A change in lot is required when there is a change in variety and/or a change in harvest dates of more than 7 days and/or a change of fields.

Example: One variety planted in one field harvested within a 7 day period would be considered one test lot. Two varieties planted within one field, even if they are harvested within the same 7 day period, would be considered two lots.

Section 2.3: Onion sample lots must be tracked and segregated.

The grower/packer must maintain lot integrity throughout all handling and packing processes to insure that "tested" lots are not co-mingled with untested lots. Records of the movement of tested lots from the field through the packing, and storage and re-packing process must be maintained through all product

handling steps so that "tested" lots are not co-mingled with untested lots.

Section 2.4: Onion samples must be collected using a statistically valid sampling density.

In the Vidalia onion production region it has been determined that two 10-bulb samples must be collected from each acre of any commercial lot. Sampling density in a given field lot was established for Vidalia onions through a statistical sampling study conducted by the University of Georgia and published in HortTechnology (1998, Volume 8, pages 329-332).

Samples must be collected on a stratified grid basis which equally represents the characteristics of the field lot. Samples can not be taken from a single geographical location within a lot. If a lot size is less than 3 acres, six 10-bulb samples must be collected on a stratified grid basis which equally represents the spatial characteristics of the lot.

Section 2.5: Each onion sample must consist of 10 bulbs which are size representative of the marketable onions in the field.

A single sample is defined as a 10-bulb composite selected from adjacent plants in a single location within the field lot. The 10-bulb sample should be size representative of other plants within reasonable proximity. Only disease-free and marketable bulbs should be collected.

Section 2.6: Onion Samples must be tested in accordance with section 1 of this regulation.

Section 2.7: Pungency testing results have a limited length of validity.

As bulb pungency changes during long-term storage, the test values are considered valid for 50 days. If any lot remains in storage for a period longer than 50 days after harvest, the onions will need to be retested. Onion lots will need to be re-sampled on a lot basis. Two 10 bulb samples will be needed per acre equivalent from stored onion lots. For example, if



onion yield from a lot was 500 50 pound units, then two 10 bulb samples would need to be retested per 500 50 pound units coming out of any lot in storage longer than 50 days.

**Section 2.8: Disclaimer:**

"The pungency results reported were obtained using the sample collection and pungency analysis method specified by the Georgia Department of Agriculture. This is the method that must be utilized if pungency values are utilized in the promotion and/or marketing of Vidalia onions."

**40-7-8-.08 Handling Requirements.**

(1) All Vidalia onions must be graded and packed in the Vidalia onion production area. No bulk shipments of Vidalia onions to destinations outside the Vidalia onion production area for packing or storage will be allowed, except as otherwise provided in these rules. Nothing contained in this definition shall authorize the repacking of Vidalia onions except as specifically authorized under Paragraph 40-7-8-.08 (1) (f) 2. of these rules.

(a) Grade Requirements - No Vidalia onion may be offered for sale other than those that meet the grade standards for a U. S. No. 1, provided that the Commissioner may establish tolerances or percentages of that Grade each marketing season upon the recommendation of the Vidalia Onion Advisory Panel.

(b) Size Requirements - Size shall be specified in connection with the grade in terms of one of the size classifications listed below:

1. "*Small*" shall be from 1 to 2 ¼ inches in diameter.
2. "*Medium*" shall be from 2 to 3 ¼ inches in diameter.

3. "*Large Medium*" shall be 2 ½ inches or larger in diameter.

4. "*Large*" or "*Jumbo*" shall be 3 inches or larger in diameter.

5. "*Colossal*" shall be 3 ¾ inches or larger in diameter.

(c) Tolerances for size: In order to allow for variations incident to proper sizing, not more than 5 percent by weight of the onions in any lot may be smaller than the minimum diameter specified. In addition, not more than 10 percent by weight, of the onions in any lot may be larger than the maximum diameter specified.

(d) Special Purpose Shipments:

1. The minimum grade, size and quality requirements set forth in previous paragraphs of this section shall not be applicable to shipments of onions for charity, relief, and processing handled in accordance with paragraph (e) of this section.

2. Gift Packages - The handling by any person of gift packages of onions shall conform to all handling, grade, size, quality and labeling requirements of this section.

3. Experimental Shipments - Upon approval of the Department, Vidalia onions may be shipped in bulk or other containers for experimental purposes, provided they are handled in accordance with paragraph (e) of this section. The shipper must furnish the Department with out-turn reports of such shipments.

4. Export Shipments - Export shipments must comply with the handling, grade, size, quality, and labeling requirements set forth in this section.

5. Onions not exempt under paragraph (d) of this section, or not handled in accordance with paragraph (d) of

this section, shall be mechanically mutilated at the packing shed or physically destroyed by other means approved by the Commissioner, rendering them unsuitable for fresh market.

(e) Safeguards - Each grower or handler making shipments of onions for relief, charity, processing, or experimental purposes shall:

1. Apply to the Department for and obtain a Certificate of Privilege to make such shipments.

2. Furnish reports of each shipment made under the applicable Certificate of Privilege.

3. Such reports shall be furnished to the Department in such manner, on such forms, and at such time, as it may prescribe. Each grower or handler shall maintain records of such shipments and the records shall be subject to review and audit by the Department.

4. In addition to the provisions in the preceding paragraphs any grower or handler making shipments for processing shall:

- (i) Weigh or cause to be weighed each shipment, prior to, or upon arrival, at the processor.

- (ii) Attach a copy of the weight ticket to a completed copy of the Report of Special Purpose Shipment and return both promptly to the Department.

- (iii) Make each shipment directly to the processor or the processor's subcontractor, and attach a copy of the Report of Special Purpose Shipment.

- (iv) Each processor or processor's subcontractor who receives Vidalia onions for processing, shall weigh the onions upon receipt, complete the Report of Special Purpose Shipment which accompanies each load, and mail it immediately to the Department.

(v) Each processor or subcontractor for any stage of processing who receives cull Vidalia onions, shall make available at its business office at any reasonable time during business hours, copies of all applicable purchase orders, sales contracts, or disposition documents for examination by the Department, to enable it to determine the disposition of the onions.

5. Cull Vidalia onions transported in bags shall be transported in 50-pound unlabeled bags.

(f) Repacking

1. Commercial repacking of Vidalia onions is prohibited.

2. Retail repackers may repack Vidalia onions for in-house sales directly to consumers provided the onions have previously met the requirements of these regulations.

(g) Facility Packing Requirements

(1) No registered grower/packer may pack or store any yellow onions, other than Vidalia Onions, in any facility within the Vidalia Onion Production Area, while Vidalia onions are being packed or stored within the same facility, or on the same premises.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.09 Invoices.**

All onions sold as Vidalia onions must be accompanied by an invoice, bill of lading, bill of sale or other documentation issued by the seller, to show the producer of the onions by name and address, or the person making the sale if other than the producer, name and address of person or persons to whom sold and shipped, the quantity and grade, if applicable. Copies of invoices, bills of lading, bills of sale or other documentation, shall be required to be furnished to the Department upon request, provided that nothing herein shall be construed to

require the maintaining of records of a retail sale to an ultimate consumer. Copies of invoices, bills of lading, bills of sale or other documentation, shall be maintained by the seller at the place of business of the firm for a minimum of four years after the issuance date.

**Authority O.C.G.A. Sec. 2-14-133.**

#### **40-7-8-.10 Right of Entry.**

The Commissioner or his duly authorized agent shall have free access at all reasonable hours to any production area, or any packaging, processing, and storage facilities where onions are being held for introduction into commerce, and any vehicle being used to transport or hold such onions for the purpose of:

(a) Inspecting such area, facility or vehicle to determine if any of the provisions of these regulations and the Georgia Food Act are being violated;

(b) Examining business records and invoices to determine the origin of any onions; and

(c) Securing samples of onions, onion packaging or containers, labels, tags, seals, stamps, or other identification devices.

**Authority O.C.G.A. Sec. 2-14-133.**

#### **40-7-8-.11 Business Records.**

All persons producing, packaging, processing, distributing or selling onions as Vidalia onions must retain for a period of four years those records which indicate the origin of any onions produced, packaged, processed, distributed or sold by them.

**Authority O.C.G.A. Sec. 2-14-133.**

#### **40-7-8-.12 Prohibited Acts.**

The following acts and the causing thereof within this State are prohibited:

(a) The selling or offering for sale of any onions as Vidalia onions unless such onions are the type defined in paragraph (g) of Section 40-7-8-.02 of these rules, and were grown in the Vidalia onion production area as defined in paragraph (i) of Section 40-7-8-.02 of these rules.

(b) The packaging or labeling of any onions as Vidalia onions for sale, or the use of the term "*Vidalia*" in connection with the labeling or packaging of onions for sale, unless such onions are of the type defined in paragraph (g) of Section 40-7-8-.02 of these rules, meet all standards for grades of Vidalia onions as required in paragraph (a) of Section 40-7-8-.08 (1) of these rules, were grown in the Vidalia onion production area as defined in paragraph (i) of Section 4-7-8-.02 of these rules, and unless a current Certification Mark Agreement has been entered into as provided by Section 40-7-8-.04 of these rules.

(c) The selling, holding, offering for sale, packaging or labeling of onions as Vidalia onions in violation of the Georgia Food Act.

(d) The production and/or packaging of onions as Vidalia onions unless the producer and/or packer is properly registered, as provided by Section 40-7-8-.03 of these rules.

(e) The handling or shipping of Vidalia onions in bulk outside the production area, or Vidalia onions which have not been graded and packed, as provided by these rules, except for charity, relief, processing or experimental shipments, as provided for in paragraph (d) of Section 40-7-8-.08 (1) of these rules.

(f) The repacking of Vidalia onions except as specifically authorized under Paragraph 40-7-8-.08 (1) (f) 2. of these rules.

(g) The packing or storage by a registered grower/packer of any yellow onions prohibited under Paragraph 40-7-8-.08 (2) of these rules.

(h) The failure to provide information as required in paragraph 40-7-8-.03.2 of these rules related to documentation of sales by persons and entities to Vidalia onion growers. Any such information deemed confidential shall be subject to the requirements of Paragraph 40-7-8-.18 of these rules.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.13 Variances.**

Upon the application of any person showing:

(a) That he has produced and sold or marketed onions as Vidalia onions in this State within three years prior to the effective date of these regulations; and

(b) That continued production and sales or marketing of such onions by the applicant would be authorized under these rules but for the fact that the onions would be grown outside the Vidalia onion production area, the Commissioner may grant a variance to such person authorizing him to continue to produce, package, store and sell or market such onions in the production area specified in the application. Any such action by the Commissioner shall authorize a variance only as to the production area, and the person receiving the variance shall be subject to all other requirements contained in these rules. A variance may not be transferred. The Commissioner, under the conditions he prescribes, may require the submission of such information or documentation as he deems necessary in connection with the issuance of such variances. All applications for variances shall be on forms developed by the Commissioner. An application for a variance must be filed with the Commissioner by December 31, 1987, in order to be eligible for consideration. Variance Application Forms may be obtained from the Georgia Department of Agriculture, Markets Division, Capitol Square, Atlanta, Georgia 30334.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.14 Certified Controlled Atmosphere Storage.**

Any person involved in the production, packaging, holding, storage, distribution and sales of Vidalia onions who

desires to store by such means Vidalia onions for the purpose of introduction into commerce following September 15th of the year in which the onions were produced, must notify the Department to provide inspection and certification of the storage facilities and the onions to be stored prior to storage. The Department will place seals on the facility. The Department must be notified if the seals are broken for any reason. The storer must notify the Department to request inspection and certification prior to removal from storage. The storer must maintain records for each storage cycle for a period of two (2) years. The records must contain, but not be limited to, the following:

- (a) Name of storer;
- (b) Producer name and address if other than storer;
- (c) Location of storage facility;
- (d) Diagram of facility relating to controlled atmosphere storage units;
- (e) Date of inspection by Department prior to storage;
- (f) Date onions enter storage;
- (g) Volume of onions stored by weight, bushel count or bin count;
- (h) Date onions to be removed;
- (i) Date of inspection by Department prior to removal from storage;
- (j) Volume of onions removed from storage by weight or bushel count;
- (k) Copies of invoices from sale of stored onions;
- (l) Seal numbers used to seal storage facility.

**Authority O.C.G.A. Sec. 2-14-133.**



**40-7-8-.15 Containers.**

Container manufacturers will be required to maintain for a period of four years, records indicating the quantity of Vidalia onion containers produced and persons to whom sold or shipped. Each person who produces or packages onions as Vidalia onions, must maintain records for a period of four years indicating the number of Vidalia onion containers purchased, and disposition or use of those containers. A manufacturer of containers shall not sell containers imprinted with the name and address of a producer or packer to anyone other than that producer or packer. A manufacturer shall not sell stock containers (*containers imprinted with the term "Vidalia" and bearing no producer or packer name*) to anyone other than a currently registered Vidalia onion producer or packer.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.16 Vidalia Onion Advisory Panel.**

The Commissioner shall appoint a Vidalia Onion Advisory Panel, to consist of individuals involved in growing, packing, or growing and packing Vidalia onions; at least one county cooperative extension agent from the Vidalia onion production area; and any other person or persons selected by the Commissioner, for the purpose of rendering advice upon his or her request regarding the exercise of his or her authority pursuant to Code Sections 2-14-136 and 2-14-137. Members of the advisory panel shall receive no compensation for their service as such members.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.17 Shipping Date.**

The Commissioner may determine and announce a shipping date each year for the Vidalia onion marketing season upon the recommendation of the Vidalia Onion Advisory Panel. Vidalia onions may be shipped prior to such date with a mandatory U.S. No. 1 grade certificate. The Vidalia Onion Advisory Panel shall survey the conditions of the Vidalia onion

crop and recommend a shipping date for the marketing season to the Commissioner.

**Authority O.C.G.A. Sec. 2-14-133.**

**40-7-8-.18 Confidentiality of Information.**

(1) Any data, records, reports, or information obtained from any person or business entity by the Commissioner and staff under these rules shall be reasonably available to any member of the public for inspection and copying at the expense of the person or business entity requesting copies.

(2) Upon proper demonstration by any person or business entity affirmatively showing, establishing, and declaring to the Commissioner that any records, reports, or information, or any particular part thereof, to which the Commissioner has access under these rules, would, if made public, divulge information entitled to protection or confidentiality under the law, the Commissioner shall consider such information or any particular portion thereof confidential in accordance with the purposes of the law under which confidentiality, trade secret, or protection has been claimed and established conclusively that the records, reports or information are entitled to this protection.

(3) This rule shall apply to any data, records, reports, or information which has been established and declared by the person or business entity to be confidential, trade secrets, or of a privileged or confidential nature, and required by law to be submitted to Department of Agriculture where such data, records, or information has not been publicly released, published, copyrighted, or patented.

(4) Any claim of confidentiality filed pursuant to this rule must be established and declared at the time of the initial submission of the data, records, reports or information, or the claim of confidentiality is deemed waived.

(5) To establish and declare confidentiality the person or business entity must file the claim of confidentiality which must

include the legal basis which establishes by a preponderance of evidence that the data, records, reports, or information is confidential and should be protected.

(6) At the time of submission of the claim of confidentiality the person or business entity must submit a copy of the data, records, reports, or information which has redacted the confidential data, records, reports, or information for the public file.

**Authority O.C.G.A. Sec. 2-14-133. 50-18-70 et seq.**

**40-7-8-.19 Penalty.**

Any person who violates these Rules and Regulations shall be subject to penalty as set forth in O.C.G.A. § 2-2-.9.1 and O.C.G.A. § 2-14-135.

**Authority O.C.G.A. Sec. 2-14-133.**